FORM PTO-1390 (Modified) (REV 11-98) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	
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U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	09/807011

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/FR99/02426	08 OCTOBER 1999 (08.10.99)	08 OCTOBER 1998 (08.10.98)

TITLE OF INVENTION

APPLICATIONS MANAGER WITH VARIABLE MANAGEMENT INSTRUCTION SET

APPLICANT(S) FOR DO/EO/US

Philippe Letellier, Eric Diehl, Pierre Houeix and Ralf Schaefer

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau). (English translation)
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98. with seven (7) references attached.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail 20. Return postcard receipt
20. ☐ Other items or information: **CERTIFICATE OF MAILING UNDER 37 CFR 1.10**

EL682442525US — **"Express Mail" mailing no.**

April 6, 2001 — **Date of Deposit**

I hereby certify that this application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Anelia Urban — **Typed or printed name of person mailing application**

Anelia Urban — **Signature of person mailing application**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR) 09780701	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
	JC02 Rec'd PCT/PTO 06 APR 2001	

21. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO $1000.00	
☒	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but Internation Search Report prepared by the EPO or JPO $860.00	
☐	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $710.00	
☐	International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) $690.00	
☐	International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00	
	ENTER APPROPRIATE BASIC FEE AMOUNT =	860.00
	Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	9 - 20 =	0	x $18.00	0
Independent claims	4 - 3 =	1	x $80.00	80.00
Multiple Dependent Claims (check if applicable).			☐	

TOTAL OF ABOVE CALCULATIONS =		
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable).**	☐	
SUBTOTAL =		940.00
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).	+	
TOTAL NATIONAL FEE =		940.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).**	☐	
TOTAL FEES ENCLOSED =		940.00
	Amount to be: refunded	$
	charged	$ 940.00

SCANNED

☐ A check in the amount of to cover the above fees is enclosed.

☒ Please charge my Deposit Account No. 07-0832 in the amount of $940.00 to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 07-0832 A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Mr. Joseph S. Tripoli
THOMSON multimedia Licensing Inc.
Patent Department
PO Box 5312
Princeton, New Jersey 08540

SIGNATURE

Guy H. Eriksen
NAME

41,736
REGISTRATION NUMBER

April 6, 2001
DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Philippe Letellier, Eric Diehl, Pierre Houeix and Ralf Schaefer

Filed : Herewith - National Phase of PCT/FR99/02426

For : APPLICATIONS MANAGER WITH VARIABLE MANAGEMENT INSTRUCTION SET

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Sir:

In the US national phase application of PCT/FR99/02426 please enter the following amendments.

IN THE SPECIFICATION:

Please amend the specification as follows:

On Page 1, following the title, insert this paragraph:

--This application claims the benefit under 35 U.S.C. § 365 of International Application PCT/FR99/02426, filed October 8, 1999, which was published in accordance with PCT Article 21(2) on April 20, 2000 in French, and which claims the benefit of French Application No. 98/12600, filed October 8, 1998.

BACKGROUND OF THE INVENTION

1. Field of the Invention--

Page 1, line 11 insert as heading: --2. Description of Prior Art--
Page 1, line 24 insert as heading: --SUMMARY OF THE INVENTION--
Page 3, line 3 insert as heading: --BRIEF DESCRIPTION OF THE DRAWINGS--

Page 3, line 13 insert as heading: --DETAILED DESCRIPTION--

IN THE CLAIMS:

Please amend the claims as follows. These claims replace the annexes filed with the International Preliminary Examination Report. Attached are the marked up version of these claims.

1. (Amended) A device for managing an application composed of instructions executable by an execution system, said execution system communicating with an operating system so as to access the resources of the device, wherein the device comprises an applications management module which can execute at least one management instruction set, said management instructions modifying via functions the running of an application executed by the operating system and/or the execution system, the execution of a management instruction being initiated upon a change of state of the application and/or upon an event external to the device, said external event preferably being a user command or the reception of new data.

2. (Amended) The device for managing an application as claimed in claim 1, wherein the functions of the management instructions cannot be executed by the operating system or the execution system.

3. (Amended) The device for managing an application as claimed in claim 1, wherein it comprises a means for loading the management instruction set from a source of management instructions to the applications manager.

4. (Amended) The device for managing an application as claimed in claim 3, wherein the source of management instructions is the application.

5. (Amended) The device for managing an application as claimed in claim 3, wherein the source of management instructions is the user interface.

6. (Amended) The device for managing an application according to claim 3, wherein the device possesses a standard management instruction set in memory.

7. (Amended) The device for managing an application as claimed in any one of the preceding claims, wherein the applications manager comprises several sets of management instructions originating from several sources of management instructions; a specified management instruction set being assigned to each application.

8. (Amended) The device for managing an application as claimed in any one of the preceding claims, wherein binary priority indicators are associated with the management instructions, the applications management module executing first the management instructions whose priority is the highest.

9. (Amended) A digital decoder furnished with means for receiving at least one application, said application being composed of instructions executable by an execution system, said execution system communicating with an operating system so as to access the resources of the device, wherein the device comprises an applications management module which can execute at least one set of at least one management instruction, said management instruction modifies via a function the running of the application executed by the operating system and/or the execution system, and the management instruction is executed upon the change of state of the application and/or upon an event external to the device such as and preferably a user command or the reception of a new application.

REMARKS

The specification has been amended to include a reference to the priority applications and to meet the requirements of the U.S. Patent Office.

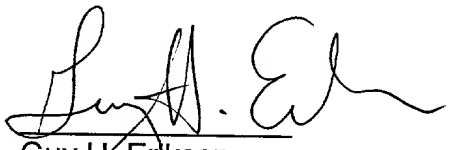
The claims have been amended to meet the requirements of the U.S. Patent Office and eliminate reference indicia.

The Abstract has been amended (from the published abstract) to remove reference indicia and is attached.

No fee is believed to have been incurred by virtue of this amendment. However if a fee is incurred on the basis of this amendment, please charge such fee against deposit account 07-0832.

Respectfully submitted,

Philippe Letellier, Eric Diehl
Pierre Houeix and Ralf Schaefer

By: 

Guy H. Eriksen
Registration No. 41,736
609/734-9699

THOMSON multimedia Licensing Inc.
Patent Operation
PO Box 5312
Princeton, NJ 08543-5312

April 6, 2001

MARKED UP VERSION OF THE AMENDED CLAIMS

1. A device for managing an application [(3)] composed of instructions executable by an execution system [(2)], said execution system communicating with an operating system [(1)] so as to access the resources of the device, [characterized in that] wherein the device comprises an applications management module [(4)] which can execute at least one management instruction set [(11)], said management instructions modifying via functions the running of an application [(3)] executed by the operating system [(1)] and/or the execution system [(2)], the execution of a management instruction being initiated upon a change of state of the application [(3)] and/or upon an event external to the device, said external event preferably being a user command or the reception of new data.

2. The device for managing an application as claimed in claim 1, [characterized in that] wherein the functions of the management instructions cannot be executed by the operating system [(1)] or the execution system [(2)].

3. The device for managing an application as claimed in claim 1 [or 2], [characterized in that] wherein it comprises a means [(12)] for loading the management instruction set from a source of management instructions [(13, 14, 15, 16)] to the applications manager.

4. The device for managing an application as claimed in claim 3, [characterized in that] wherein the source of management instructions is the application [(16)].

5. The device for managing an application as claimed in claim 3, [characterized in that] wherein the source of management instructions is the user interface [(13)].

6. The device for managing an application according to claim 3, [characterized in that] wherein the device possesses a standard management instruction set in memory.

7. The device for managing an application as claimed in any one of the preceding claims, [characterized in that] wherein the applications manager [(4)] comprises several sets of management instructions [(11)] originating from several sources of management instructions [(13, 14, 15, 16)]; a specified management instruction set being assigned to each application.

8. The device for managing an application as claimed in any one of the preceding claims, [characterized in that] wherein binary priority indicators are associated with the management instructions, the applications management module [(4)] executing first the management instructions whose priority is the highest.

9. A digital decoder [(5)] furnished with means [(7, 8, 9)] for receiving at least one application [(3)], said application [(3)] being composed of instructions executable by an execution system [(2)], said execution system communicating with an operating system [(1)] so as to access the resources of the device, [characterized in that] wherein the device comprises an applications management module [(4)] which can execute at least one set of at least one management instruction [(11)], said management instruction modifies via a function the running of the application executed by the operating system [(1)] and/or the execution system [(2)], and the management instruction is executed upon the change of state of the application [(3)] and/or upon an event external to the device such as and preferably a user command or the reception of a new application.

ABSTRACT

An information processing system or a digital decoder makes it possible to process data originating from at least one application, for example, by way of a bouquet of television programs, and comprises an operating system, a virtual machine and an application manager executing one or more variable management instruction sets so as to influence the operating system and the virtual machine during the execution of the application.

APPLICATIONS MANAGER WITH VARIABLE MANAGEMENT INSTRUCTION SET

The invention relates to an information processing system making it possible to process data originating from at least one application, comprising an applications manager executing a management instruction set. The invention also relates to a digital decoder receiving in particular applications by way of a bouquet of television programs.

An information processing system can be a machine which makes it possible to process data originating from an application. The application can be a collection of data. The data generally constitute a string of instructions formulated in a programming language. The information processing system can be constructed by using in particular an operating system and an execution system receiving data of an application. The information processing system can also comprise other systems making it possible to manage peripherals attached thereto and generally anything which is not taken onboard by the operating and execution systems.

An information processing system according to the invention makes it possible to process data originating from at least one application and comprises:

- an operating system for executing the application,
- an execution system, and
- an applications manager which can execute at least one variable management instruction set so as to influence the operating system and/or the execution system in particular when the application is executed or when switching from the execution of the application to another execution of another application.

A first embodiment of the invention makes provision for the information processing system to comprise a means for loading the variable management

instruction set from a source of management instructions to the application manager.

A second embodiment of the invention makes provision for the source of management instructions to be the application itself.

A third embodiment of the invention makes provision for the source of management instructions to originate from a supplier of the application.

A digital decoder according to the invention receives at least one application by way of data relating to services from a digital stream and comprises:

- an operating system,
- a virtual machine making it possible to execute at least one application, and
- an applications manager which can execute at least one set of variable management instructions so as to influence the operating system and/or the virtual machine when the application is executed or when switching from the execution of the application to another execution of another application.

A fourth embodiment of the invention makes provision for the variable management instruction set to be of the static declarative kind. The management instruction set describes functions relating to a state or to a transition from an executing application to another program. Each application can contain in a preamble a management instruction set which is of the static declarative kind.

A fifth embodiment of the invention makes provision for the applications manager to comprise several sets of variable management instructions, originating from several sources of management instructions.

A sixth embodiment of the invention makes provision for the applications manager to comprise a means of selecting the variable management instruction set which selects a management instruction set in accordance with at least one criterion determined so

that the selected management instruction set has priority of execution.

In what follows, exemplary embodiments of the invention are described so as to afford a better understanding thereof. Reference is made to Figures 1 to 3:

- Figure 1 containing a simplified diagram of an information processing system;

- Figure 2 containing a simplified diagram of a digital decoder;

- Figure 3 containing a simplified diagram of another digital decoder.

An information processing system represented in Figure 1 can be constructed by using an operating system 1. The operating system 1 comprises software making it possible to manage tasks, to allocate space in a memory and to address peripheral devices in conjunction with the information processing system.

An execution system 2 receives, directly or indirectly by way of a memory, data of an application 3. The execution system 2 makes it possible to execute the string of instructions conveyed by the data. The execution system 2 can be constructed with the aid of software. The execution system 2 communicates with the operating system 1 so as to access in particular the peripheral devices and a memory (not represented) of the information processing system.

The information processing system can comprise an applications manager 4. The latter makes it possible to execute a management instruction set. Thus, the applications manager 4 makes it possible to influence the operating system 1 and/or the execution system 2 when the application is executed for example. It would for example be possible for the applications manager 4 to indicate to the operating system 1 what priorities to give to commands originating from the execution system 2 when the application is executed.

The operating system, the execution system and the applications manager are, according to the present

example, software executed by a microprocessor or an equivalent means. All this software is stored in one or more memories of the apparatus of Figure 1.

A digital decoder 5 for television 6 represented in Figure 2 makes it possible to receive an application 3 by way of a satellite receiver 7, a cable network 8 and/or a hertzian antenna 9. The decoder is for example a decoder meeting the DVB and MPEG II standards. The application is transmitted in a multiplexed digital stream, the latter not necessarily transporting an audiovisual television program. It is also possible to receive other applications on other multiplexes. Moreover, it is also possible to receive applications by way of a digital channel modulated on an analog signal and time-division multiplexed with an analog television signal, but in what follows we shall generally be concerned with the case of a totally digital system.

The operating system 1 makes it possible in particular to manage inputs/outputs and a memory (not represented) of the digital decoder 5. A virtual machine 10 makes it possible to execute the application 3. The virtual machine 10 is an exemplary execution system 2 which makes it possible to execute an application written in a so-called portable language. Another virtual machine 10 could be implemented in respect of an information processing system other than the digital decoder 5, thus making it possible to execute the application 3 on this other system.

The digital decoder 5, and more especially, the assembly formed by the operating system 1 and the virtual machine 10, can be designed to execute several applications in a multitask manner, that is to say at the same time.

The digital decoder 5 furthermore comprises hardware and/or software components (not represented) such as one or more drivers so that the operating system can communicate with peripheral devices, a user interface allowing a user to communicate with the

application 3 executed or with the digital decoder 5 and optionally comprising one or more function keys, a memory making it possible to store the application 3, possible other applications or graphical data, etc. The decoder can also comprise decoding means (MPEG II audio and video decoding according to the present example) making it possible to decode a demultiplexed stream of audiovisual data from a multiplexed digital stream and to transmit the decoded video to the television 6.

The application manager 4 makes it possible to execute a management instruction set and communicates with the virtual machine 10 and the operating system 1. It carries out functions which are not taken on board either by the virtual machine 10, or by the operating system 1.

The functions resulting from the execution of the management instruction set are for example the following:

- consideration of a state of the executing application when a change of transponder (corresponding to a multiplexed stream) or of service occurs. The change of transponder/service can be brought about for example by a user, by the application itself or even by a broadcaster (which are not represented) which broadcasts the content of the streams. The applications manager 4 can, for example, interrupt the executing application or place it on standby. The applications manager 4 can freeze the last picture displayed on the television or display a specified graphic while the change of transponder and/or of the service is effected. This may be necessary to fill in time while loading another application from a stream from the new transponder or associated with another service;
- starting a specified procedure when a change of application has not been performed within a specified time span;
- configuring function keys and rendering them active or otherwise;

• determining in which order to enable audio, video components when the latter are transmitted with the application associated with a service and when the application calls upon them etc.

The management instruction set is stored in a management memory (not represented in Figure 2) and cannot be modified during normal use of the digital decoder 5. The management instruction set is relatively voluminous and complex. Its formulation deploys a considerable development effort. Thus, each time a modification of the management instruction set is required to obtain a different manner of operation of the applications manager 4, it is necessary for a manufacturer or for a programmer of the applications manager 4 to re-embark on a new development of a complete set of management instructions and on a new configuration of the digital decoder 5, in particular the replacement or the total reprogramming of the applications manager 4, this possibly entailing major costs.

It would be advantageous to be able to modify the management instruction set at lesser cost.

It would also be advantageous to be able to update the application manager 4 while avoiding having to install a new configuration in the digital decoder through intervention by the manufacturer on the digital decoder.

Figure 3 contains the diagram of a digital decoder 5 comprising the operating system 1 and the virtual machine 10.

The application manager 4 comprises a variable management instruction set 11, that is to say one which can be modified, exchanged or erased at any moment.

Thus, part of the management instruction set can be changed to satisfy a variable specification of the application manager. This avoids new development of a complete set of management instructions.

The variable management instruction set 11 is executed by the application manager 4, this resulting

in a number of functions which are implemented via communication with the operating system 1 and the virtual machine 10. These functions can be the same as those described earlier in this description. However, the list of functions described is not exhaustive. It is simply intended to explain through examples the role of the applications manager 4.

The variable management instruction set 11 can be stored in a rewritable memory, for example, in a random access memory. A loading means 12 makes it possible to load the variable management instruction set 11 to the applications manager 4. The loading means 12 can be linked to one or more sources of management instructions; for example a user interface 13 of the digital decoder 5, a direct link 14 with a source of the applications, an application link 15 with the application 3 itself. In the latter case, the variable management instruction set 11 can be contained in a preamble 16 of the application 3. The preamble 16 is a first part of the application 3 received by the digital decoder 5. Having received the variable management instruction set 11, the application manager 4 can execute these instructions and carry out corresponding functions while the application 3 is being loaded in full.

Moreover, the decoder can comprise a default instruction set, which is short-circuited by an instruction set loaded later, if certain criteria, for example priority criteria, are fulfilled. This short-circuiting can be associated with one or more applications. In this case, the default instruction set is not erased, but remains available for other applications.

The loading means 12 is for example a digital packet demultiplexer of the MPEG II Systems type received by way of the direct link 14. The source of applications may be multifold: a server linked to the decoder 5 via the switched telephone network, a satellite, cable or hertzian digital or analog

broadcasting network, etc. The necessary circuits for reception and demodulation are not illustrated, since they are well known per se to those skilled in the art. The existence of a preamble 16 does not necessarily entail the existence of the application 3. It is conceivable to include a management instruction set in the preamble 16 and to transmit the latter to the loading means 12, even without there being an associated application.

In the case where the source of the management instructions is the direct link 14 with a source of the applications, it is possible for a broadcaster of the application to supply a specific set of management instructions for his applications. The latter set may for example entail the application manager 4 displaying a graphic characteristic of the broadcaster during the waiting time caused by the loading of an application.

In the case where the source of the management instructions is the user interface 13, it is possible for a user to determine for example the functions underlying certain tasks of the digital decoder 5. As already mentioned, if an instruction set local to the decoder exists, it may be short-circuited under condition by a loaded set.

In the case where no external source such as the user interface 13, the direct link 14 or the application link 15 supplies management instructions, provision may be made to use a standard management instruction set stored permanently in the applications manager 4.

In an advantageous embodiment there is provision for the management instruction set originating from different sources to be given priorities for execution, according to a predetermined criterion. Thus, it may for example be defined that a management instruction set originating via the application link 15 has priority over an instruction set originating via the direct link 14 with a source of the applications. The applications manager receiving or

having received management instruction sets from these two links 14 and 15, gives priority to the execution of that originating from the application link 15.

The variable instruction set 11 can have a variable volume. For example, provision could be made for the latter to comprise management instructions originating from several sources of management instructions. Thus, if the decoder allows the execution of several applications in parallel, it is possible for the application manager 4 to carry out different functions for each executing application.

An example of the behavior of a decoder will be described in what follows.

According to this example, the applications manager comprises the following instructions:

- Display a boot-up bitmap
- Set the video screen to black
- Freeze the video image
- Define the keys managed by the application at the outset (group of keys of the remote control)
- Take the focus if possible
- Enable audio/video
- Disable audio/video

The parameters supplied in respect of or with a given application are:

- Boot-up bitmap (optional)
- Group of keys
- Priority of the application

It is assumed that initially the state of the decoder is the following:

- Audio/video in progress: yes
- Priority with the foreground application ("possessing the focus"): 1 (navigator)
- Applications executing:

Name	Supplier	Priority	Focus
Weather	Broadcaster X	2	No
Navigator	Decoder manufacturer	1	Yes

In the case of the present example, the navigator is an application built into the decoder at the outset and allowing the user to implement the decoder.

A request for focus on the part of an application signifies according to the present example that this application is requesting to be executed in the foreground. The other applications may nevertheless be executed in parallel, in the "background", if the system is multitask.

A new application is then loaded, for example a telepurchasing application, also supplied by the broadcaster X, this loading being triggered by the detection of the broadcasting of the application in the digital stream received by the decoder.

- New application:

Name	Provider	Priority	Focus request
Shop	Broadcaster X	2	Yes

The (default) static instruction set of the decoder is:

Define the keys managed by the application on start up (group of keys)

If Request Focus Then Take the focus if possible

(Remark: the possibility of taking the focus depends on the priority of the application which made the request relative to that possessing the focus)

The instruction set present in the signal and positioned by the broadcaster X for the Shop application is the following:

Set the video plane to black

If audio/video in progress Then disable audio/video

Define the keys managed by the application on start up ({Quit, P+, P-})

If Request Focus Then Take the focus if possible

Instruction set present in the application:

Enable audio/video

The following dynamic behavior results from this collection of sets:

1. The application is being initiated, an instruction set must be applied (before initiation of the application). The broadcaster has given an instruction set for this application which has priority over the default instruction set of the terminal. It is therefore the set of the application which is applied.

2. The video plane is set to black.

3. The audio/video which is currently playing is stopped.

4. The Quit, P+ and P- keys of the remote control will not be managed by the terminal when the application has the focus.

5. Focus is requested, but denied since the Shop application has lower priority than the application having the focus (Navigator)

6. The application is initiated (without the focus)

7. The application applies its complementary instruction set and enables a new audio/video stream.

The new state of the decoder is then:

- Audio/video in progress: yes
- Priority for the application having the focus: 1 (Navigator)
- Applications executing:

Name	Supplier	Priority	Focus
Weather	Broadcaster X	2	No
Navigator	Decoder manufacturer	1	Yes
Shop	Broadcaster X	2	No

The advantages of the invention are numerous.

- A broadcaster or a supplier of services can himself define the behavior of a decoder, relating to the initiation of a downloaded application, through management of the priorities of the instruction sets

and by including, for example, an instruction set in the preamble of the application, in such a way that this set can be executed while the application finishes being loaded.

- A broadcasting of management instruction sets by way of the service information of a digital stream makes it possible to define the conditions of initiation of applications, without the broadcasting of these sets necessarily having to be done at the same time as that of the application.

- The manufacturer of the hardware (decoder in the present case) can also monitor the behavior of an application. For example, by choosing the priorities appropriately, he can retain full control of the decoder and force any application to use the predetermined management instruction set.

LIST OF REFERENCES

1. Operating system
2. Execution system
3. Application
4. Applications manager
5. Digital decoder
6. Television
7. Satellite receiver
8. Cable network
9. Hertzian antenna
10. Virtual machine
11. Variable management instruction set
12. Loading means
13. User interface
14. Direct link with a source of applications
15. Application link
16. Application preamble

CLAIMS

1. A device for managing an application (3) composed of instructions executable by an execution system (2), said execution system communicating with an operating system (1) so as to access the resources of the device, characterized in that the device comprises an applications management module (4) which can execute at least one management instruction set (11), said management instructions modifying via functions the running of an application (3) executed by the operating system (1) and/or the execution system (2), the execution of a management instruction being initiated upon a change of state of the application (3) and/or upon an event external to the device, said external event preferably being a user command or the reception of new data.

2. The device for managing an application as claimed in claim 1, characterized in that the functions of the management instructions cannot be executed by the operating system (1) or the execution system (2).

3. The device for managing an application as claimed in claim 1 or 2, characterized in that it comprises a means (12) for loading the management instruction set from a source of management instructions (13, 14, 15, 16) to the applications manager.

4. The device for managing an application as claimed in claim 3, characterized in that the source of management instructions is the application (16).

5. The device for managing an application as claimed in claim 3, characterized in that the source of management instructions is the user interface (13).

6. The device for managing an application according to claim 3, characterized in that the device possesses a standard management instruction set in memory.

7. The device for managing an application as claimed in any one of the preceding claims, characterized in that the applications manager (4) comprises several sets of management instructions (11) originating from several sources of management instructions (13, 14, 15, 16); a specified management instruction set being assigned to each application.

8. The device for managing an application as claimed in any one of the preceding claims, characterized in that binary priority indicators are associated with the management instructions, the applications management module (4) executing first the management instructions whose priority is the highest.

9. A digital decoder (5) furnished with means (7, 8, 9) for receiving at least one application (3), said application (3) being composed of instructions executable by an execution system (2), said execution system communicating with an operating system (1) so as to access the resources of the device, characterized in that the device comprises an applications management module (4) which can execute at least one set of at least one management instruction (11), said management instruction modifies via a function the running of the application executed by the operating system (1) and/or the execution system (2), and the management instruction is executed upon the change of state of the application (3) and/or upon an event external to the device such as and preferably a user command or the reception of a new application.

ABSTRACT

APPLICATIONS MANAGER WITH VARIABLE MANAGEMENT INSTRUCTION SET

An information processing system or a digital decoder (5) makes it possible to process data originating from at least one application (3), for example, by way of a bouquet of television programs, and comprises an operating system (1), a virtual machine (10) and an application manager (4) executing one or more variable management instruction sets (11) so as to influence the operating system (1) and the virtual machine (10) during the execution of the application.

FIGURE 3

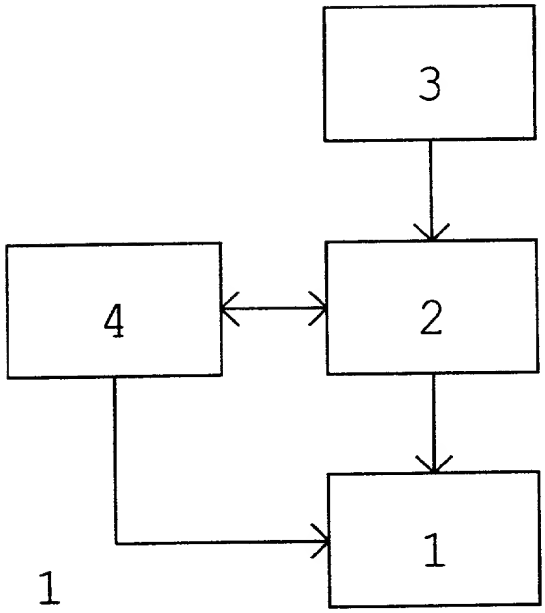


FIG. 1

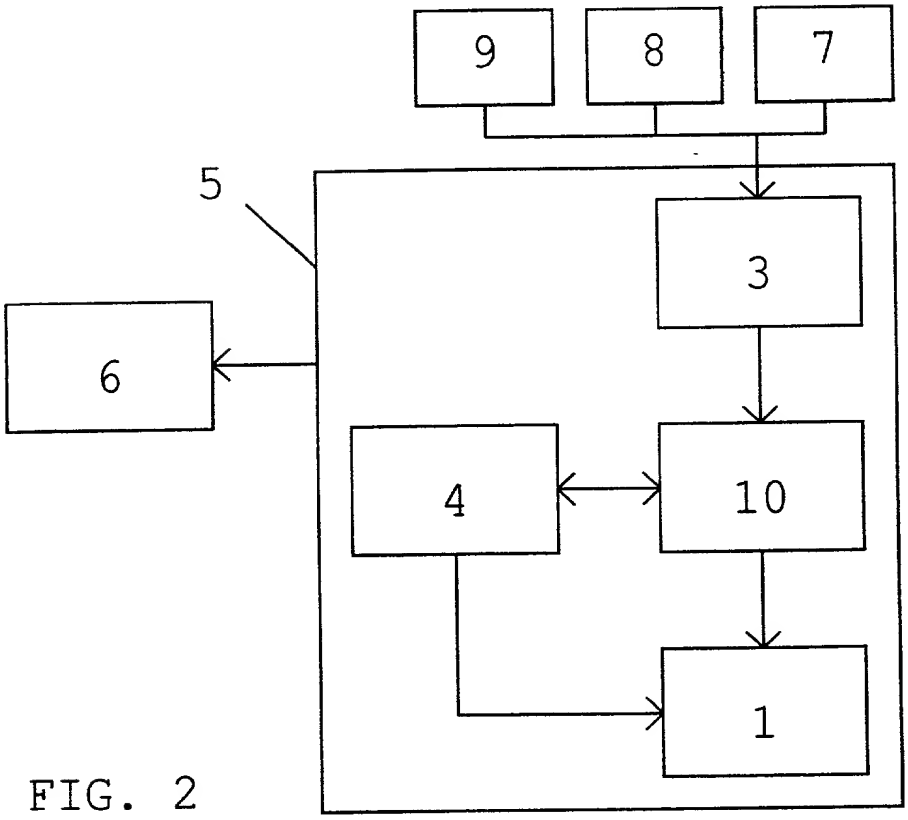


FIG. 2

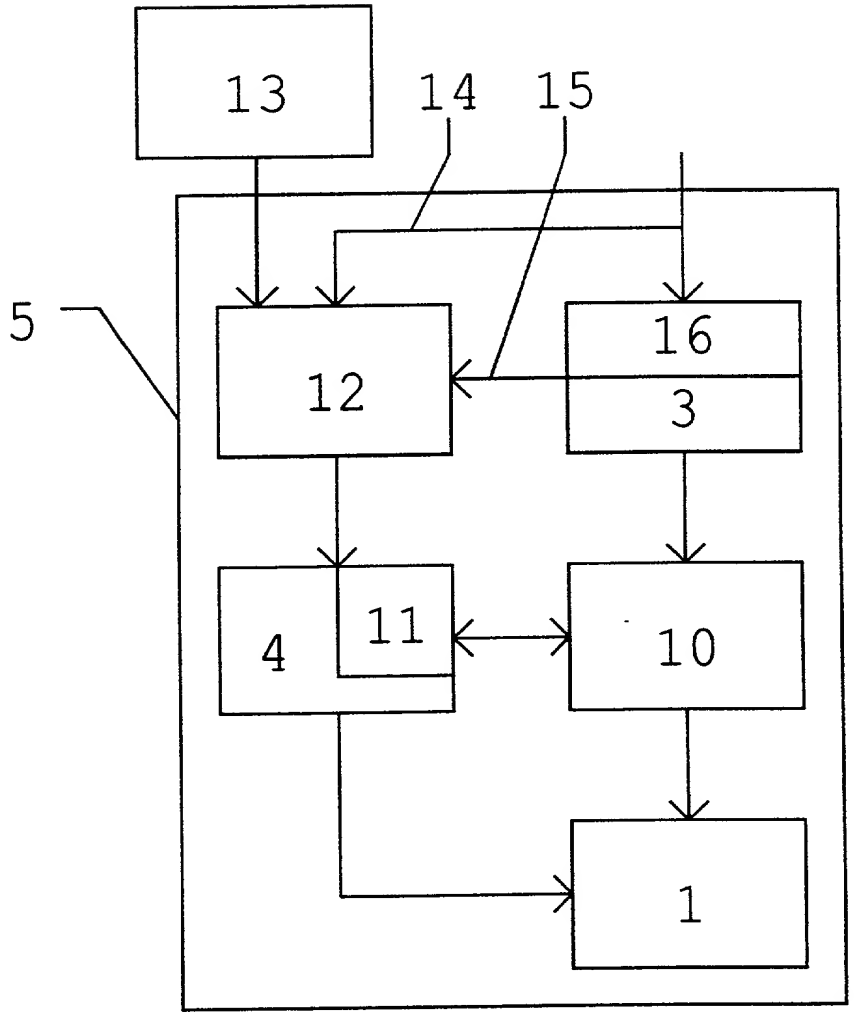


FIG. 3

DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

"APPLICATIONS MANAGER WITH VARIABLE MANAGEMENT INSTRUCTION SET"

the specification of which
(CHECK ONE) ( ) is attached hereto.
(XX) was filed on April 6, 2001, Application Serial. No. 09/807011
and was amended on

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No
9812600	FR	October 08, 1998	xx	

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and, insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: Filed:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Dennis H. Irlbeck (Reg. No. 26,372), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

Signature: _____ Date: 20/4, 2001.
Sole or First Joint Inventor: Philippe Letellier
Citizenship: FR
Residence and Post Office Address: 4 rue des Melliers
F-35760 Saint Grégoire
France

Signature: _____ Date: 19th April, 2001.
Second Joint Inventor: Eric Diehl
Citizenship: FR
Residence and Post Office Address: La Buzardière
F-35340 Liffré
France FRX

Signature: _____ Date: 20th April, 2001.
Second Joint Inventor: Pierre Houeix
Citizenship: FR
Residence and Post Office Address: 42 square de la Fosse aux Moines
F-35510 Cesson-Sévigné
France FRX

Signature: _____ Date: 20th April, 2001.
Second Joint Inventor: Ralf Schaefer
Citizenship: DE
Residence and Post Office Address: 5 rue du Martin Pêcheur
F-35690 Acigné
France FRX